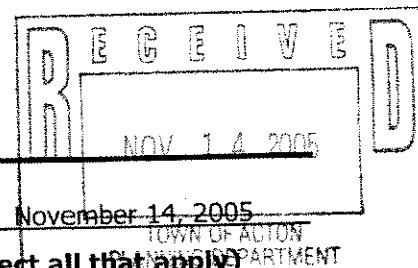


PROJECT APPLICATION FORM - 2006



Applicant: Acton Board of Selectmen

Submission Date: November 14, 2005

Applicant's Address, Phone Number and Email

Purpose: (Please select all that apply)

Tom Tidman, Natural Resources Director
472 Main Street, Acton MA 01720
978 264 9631 ttidman@acton-ma.gov

- ☒ Open Space
- ☐ Community Housing
- ☒ Historic Preservation
- ☒ Recreation

Town Committee (if applicable): Land Stewardship Committee

Project Name: Restoration of Historic Stone Chamber

Project Location/Address: Nashoba Brook Conservation Land

Amount Requested: \$ \$20,000

Project Summary:

The project's purpose is to restore the stone structure located on Nashoba Brook Conservation Land on the property's Rt. 27 side and near the river. The restoration's aim is to return the structure to a condition that both resolves present safety hazards (danger of collapse), and re-establishes certain architectural principles applied during the period of its original construction.

The proposed project would be conducted as a collaborative effort between the Town of Acton and the New England Antiquities Research Association (NEARA). The latter is a non-profit organization dedicated to research, public education, and preservation of these and other categories of stone structures existing both anciently and historically in the Northeast region. The Land Stewardship Committee would carry out Acton's contribution to the effort. NEARA's interest is to conduct a "model" chamber restoration, including, in addition to the stone masonry, appropriate historical research and documentation to establish to the extent possible the cultural and historical context. As the work progresses, if the professionals conducting the work decide that an archaeological component is also indicated, such a phase would be incorporated into the proposed schedule. A comprehensive report, to be published in the *NEARA Journal*, and possibly elsewhere, together with appropriate publicity would round out the goals.

The NEARA Research Committee has offered \$1000.00 to support the effort.

Background

This structure, referred to either as the "Potato Cave" or the Acton Chamber, is similar to a few hundred stone structures found throughout New England and Putnam County, New York State. The accepted historical and archaeological interpretation for their purpose was as storage chambers for root crops and other agricultural materials during the Colonial Period. Other scholars hold an alternative view which is that some at least of these chambers were constructed in the pre-Colonial era by Native Americans for the purpose of undertaking vision quests.* Other theories abound.** Regardless of the origin or purpose of this structure, it has an historical value that should be preserved.

Among such structures, this chamber is unique in its configuration, having originally had a low tunnel entrance similar to one's typical image of an igloo. This tunnel is of a modified post and lintel design, as is the main room of the chamber itself. Another unusual feature of the structure is the plan, which is L-shaped, with a stone post at the junction of the entrance tunnel and the main room that extends to the east. The support column may have been constructed later than the original structure. Chambers of this sort typically have a post and lintel entrance, with corbelled side walls (gradually sloping inward as the courses rise) and capped off with a series of large, flat

capstones laid crosswise between front and back. Most such chambers are not free standing, but are built partially into the side of a hill and mounded over with dirt on top, as is the case with the Acton Chamber.

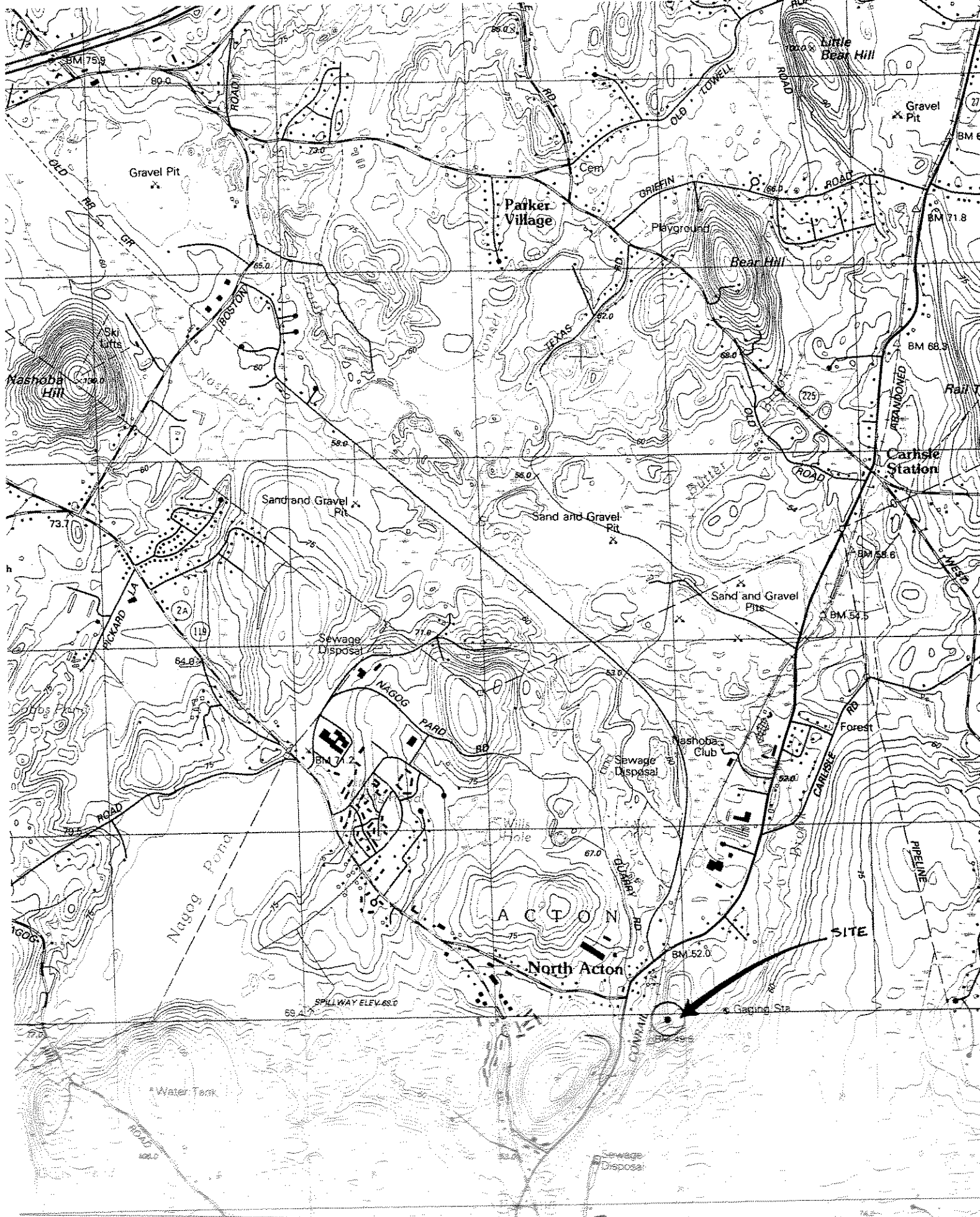
The Acton Chamber exhibits most of these features, except corbelling of the walls is minimal. The unusual tunnel entrance has been partially collapsed along its east wall for many years, allowing silt eroding off the hillside to clog up the entrance. One or two of the capstones are missing. More recently, the west wall has begun to sag, resulting in one capstone being at a dangerous slant. It is presently unsafe for anyone to enter without using extreme caution not to touch the stones in the sagging wall.

*It should be noted in this connection that during the mid-1600s, the Mass. Bay Co., functioning as a governing body, granted rights to the Rev. John Eliot to establish several "praying villages" ranging in location from present-day Natick to Littleton and beyond. These villages were intended to protect Native Americans from being hunted and other violence if they agreed to adopt European culture—dress, customs, language, and religion. Many did so for safety, but continued to practice their own culture secretly. One such village, 4 square miles in extent, was centered in present day Littleton and included the portion of Acton where the chamber and multiple other stone structures are located. Sarah Doublet was the most famous of the Littleton village residents. Today there is a conservation area in Littleton named in her honor.

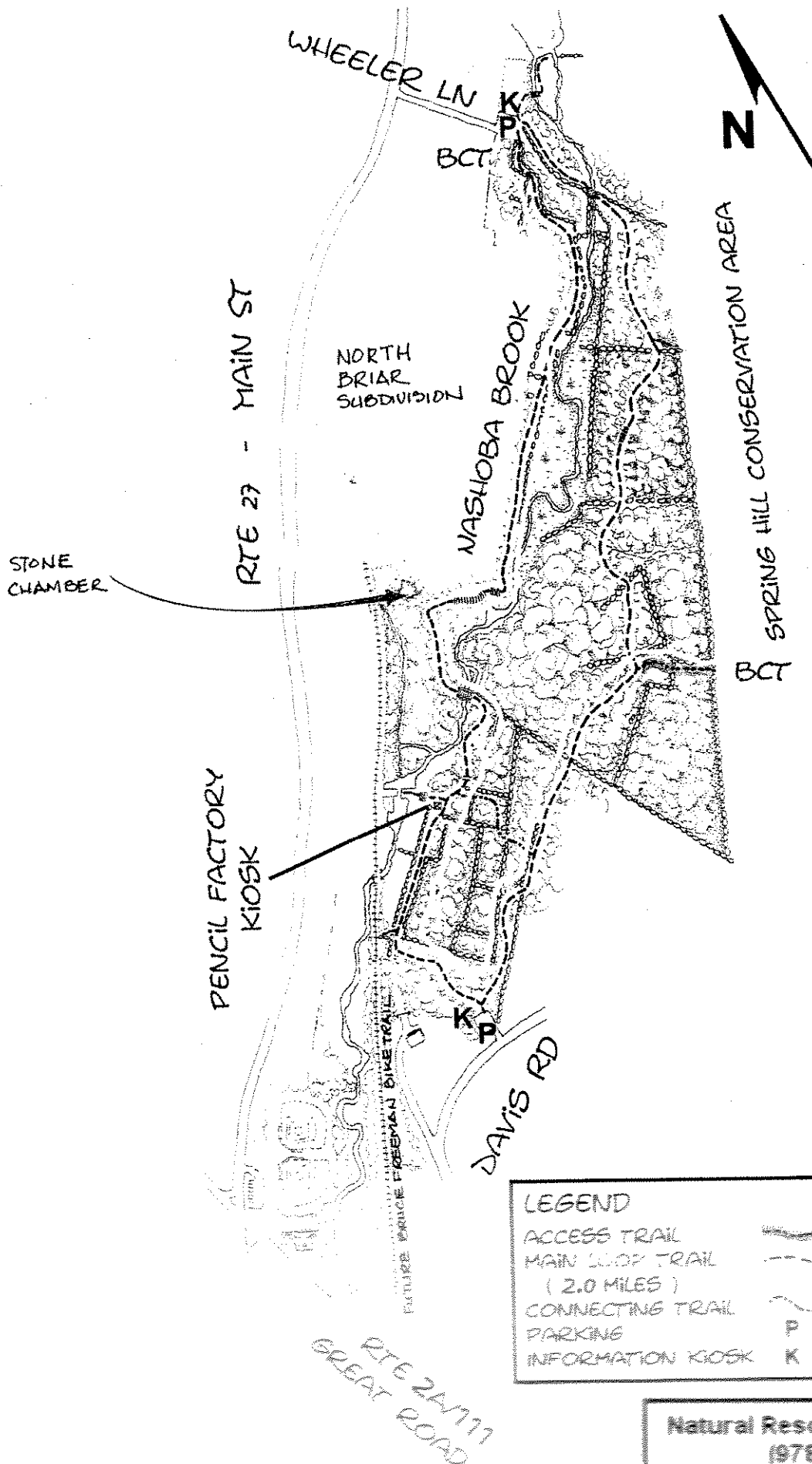
** It should be noted that there are remains of a stone "pen" directly east of the chamber, and that the whole complex is ¼ mile from the extensive stonework at the end of Wheeler Lane. This latter site, which represents a large and prosperous Colonial farming complex, includes house foundation, barn foundation, animal pens, droving corridor, and many purposely built stone walls.

Estimated Date for Commencement of Project: May 2006

Estimated Date for Completion of Project: December 2006 (excepting possible publication of the results)



NASHOBA BROOK CONSERVATION AREA



LEGEND

ACCESS TRAIL	
MAIN LOOP TRAIL (2.0 MILES)	
CONNECTING TRAIL	
PARKING	P
INFORMATION KIOSK	K

Natural Resources Department
(978) 264-9631
www.town.acton.ma.us/LSCOM

PROJECT NARRATIVE

Surveys already conducted: Restoration architect, Suzanne Carlson, in August 2004, and later, ancient stone-structure mason, Dr. David Stewart-Smith, together with Linda McElroy, in October 2004, viewed and photographed the chamber. The latter survey was done in the rain, with leaves partly down, from both the outside and the inside. Below are observations and suggestions from both specialists.

Not only is the tunnel entrance badly collapsed (one wall entirely tumbled), but the interior west wall is bulging in an ominous way. Ms. Carlson and Ms. McElroy surveyed (measured and photographed) this chamber 20 or more years ago. The results are stored in the NEARA Archives and a report was published in the *NEARA Journal* Vol. 16, #2, 1981, complete with pictures and drawings. Current comparison with the earlier measurements would indicate how recent the bulging is.

Both specialists agree there are only two viable options: either restore the chamber or demolish it. In its present condition, it poses a liability, as the west wall and one of the roof slabs could collapse at any time. Both Carlson and Stewart-Smith recommend the restoration option, though the work will be extensive, requiring re-building of the entire west wall and the entire tunnel structure. Stewart-Smith believes, based on the characteristics of the stonework, which was not well done originally, that the structure is early Colonial. The stonework is poor enough in quality that he does not believe it important to number the stones as they are deconstructed so that they go back to their original locations. More important is to create a stable structure. It would be important to try to restore the local landscape if that can be determined from the surrounding (stone) features and from historical research.

Preparatory study: Carlson recommends a preparatory study which would include compiling existing source material, such as can be found in the Acton Library, the local Historical Society, and the NEARA Archives, at the New Hampshire Technology Institute in Concord NH. Also consult the *NEARA Journal* article. A report on the existing conditions should be prepared, including updated measured drawings and photos. NEARA would undertake this responsibility. This work could be done before, concurrent with, or after the deconstruction begins.

Historical Research: David Stewart-Smith emphasized the importance of trying to understand the topographical and historical context within which this structure was built. The abutting ruins of a foundation(?) to the east of the chamber suggests some sort of husbandry use. The size of the oaks growing in the foundation hole could give a latest-possible date of construction. Stone used in such structures usually does not come from far away. The quarry or source site should be nearby and would be of interest to the study if located.

A title chain of owners and probate search would help to establish the history of the site. Town historical records and the NEARA archives at the New Hampshire Technology Institute in Concord NH, engineering plans, if any, and local and county Historical Society records should all be consulted. The title chain work could be done by a volunteer or contracted to June Miller (former NEARA member knowledgeable about such structures), who is employed by a professional firm. Or another professional firm recommended by Carlson is Commonwealth Collaborative in Leominster. There are two parts to this study, the Contact Period—Colonial history—and Indian pre-history. The book *Ceremonial Time, Fifteen Thousand Years on One Square Mile* by John Hanson Mitchell is a superb resource for such research. The square mile is in Littleton, but close enough to the Acton chamber to make it a really valuable resource. Most of this research can be conducted by Acton and NEARA volunteers.

Ideally, there should be a geology/ecology/hydrology component to the project in order to establish the context of the surrounding area (watershed). It is likely that much of this information is either already on file, or can be gathered by volunteers.

Site preparation: The site preparation (to be done by Acton volunteers) would entail brushing out the mounded area over the chamber and the surrounding ground, as Stewart-Smith would detail on a plan of

the site. This activity would prepare a work area free of brush. Significant trees are minimal here. Low brush and several large logs just below the entrance would be moved out of the way of the work area.

An access route, described in detail below, would also have to be created.

Stewart-Smith and his associate, Peter Wiggins, will remove the roof slabs and lay them up on the hillside.

Archaeology: If it is decided at this stage in the process that some archaeological work (excavation and sifting) should be undertaken, it would be carried out before any further disturbance of the present structure is attempted. This element of the proposed project is at present conditional. Stratigraphy studies most likely would not be worth doing, as the degree of erosion from the mounded top to the collapsed tunnel east wall and entrance has so silted up the tunnel area as to confuse any stratigraphic succession that might provide dating.

The mason has assured us that he will be able to decide whether archaeological work would be indicated or not as the work is begun. So far, an archaeologist able and willing to join the team has not been found. However, an archaeologist who has undertaken several projects of this type and is well known to NEARA has commented on the project. He estimates that one or two days of a supervising archaeologist's time would be sufficient to accomplish an adequate examination of the fill along the outside of the wall to be reconstructed. Labor from graduate students and other volunteers, together with the possibility of a loan of equipment (e.g., sifters) from the local chapter of Mass. Arch. would very likely satisfy an archaeological component of the project if such a component is deemed appropriate as the work progresses.

Reconstruction: When the conditional archaeological evaluation is complete, then the areas to be rebuilt will be completely deconstructed and a corridor dug out behind the west wall, down to the level where rebuilding will begin. This corridor will need to be dug along the entire length of the west wall, which extends into the hillside, and be wide enough to permit workspace for the reconstruction. The reconstructed walls are to be back-filled with crushed rock and/or small stones, and covered with landscape paper (similar to tyvek), to prevent or retard roots and water seepage from destabilizing the walls again.

Further back filling, with dirt, around the reconstructed walls and crushed rock barrier, together with restoration of the immediate landscape, to the extent desired, and clean up site will then be undertaken.

Materials and Equipment Required:

- A town backhoe will be brought down the RR track from the monument company on Rt. 27 and run along an existing path that skirts the southwestern base of the hill into which the chamber is built. The RR track will require some brushing out on one side and the path will require some improvement to widen and level it sufficiently to admit such a vehicle. Excepting the backhoe operator, this work will be carried out by LSCom volunteers under Bob Guba's (see personnel list below) direction.
- Additional stones, of transportable and buildable size for the rebuilding, and crushed rock or small stones for the back-filling will be brought in along this access route. The town has a supply of suitable stones.
- Landscaping paper.

Final report: The Mass. Hist. Comm. has criteria for project completion reports, and we will attempt to follow those criteria. Publication (monograph published by NEARA or report in the *NEARA Journal*) will follow and detail the project. The *Journal* report will not be an expense to the project.

Site Control

The chamber project will take place on the town-owned Nashoba Brook Conservation Land. Therefore, this project will be undertaken by the Town under direction of the Natural Resources Department.

Feasibility

Two surveys of the chamber have already been conducted, one by Suzanne Carlson, NEARA Board member, Publications Chairman, and restoration architect; and the other by Dr. David Stewart-Smith, a former NEARA member and specialist in dry stone masonry of the early Colonial and pre-Colonial period. The essentials of their surveys have been incorporated into the Project Narrative. Both agree that restoration is overdue, further collapse is imminent, and that the historical value of preserving this possibly ancient structure is unquestioned. It must either be restored or razed.

Accordingly, a team of enthusiastic specialists has been assembled to carry out the proposed project. These people are either professionals or specialists in some area of expertise that will be needed to satisfactorily complete the project. The team includes both NEARA members, as well as specialists associated with NEARA who are no longer members, and volunteers from the Land Stewardship Committee.

The project would be facilitated by **Linda McElroy**, former Land Stewardship Chair and long time NEARA Board member. Linda is not only somewhat knowledgeable about such structures, but is well known to both organizations. She would coordinate between the two organizations and ensure that logistical issues are dealt with in a timely fashion. She would see that participants are clear as to issues of priority and jurisdiction. Linda understands the separate phases required to complete the full-scale project and is well-acquainted with the personnel who have agreed to work on the project once it is funded. Acton's interests would supercede those of NEARA, but the expertise that certain individuals within the NEARA directorate possess is clearly superior to that of any of the current Land Stewards. The site would be off limits to all NEARA members except those designated as part of the team. Linda would interface with Tom Tidman as the Town's representative on any sensitive matter.

The collapsing wall deconstruction and subsequent stone reconstruction will be performed by **Dr. David Stewart-Smith**, who has studied and rebuilt these and associated stone structures both in New England and in Britain for many years. He has agreed to do the dry stone masonry for a very modest price. He will bring an associate, **Peter Wiggins**, with whom he has worked regularly and who is a full-time dry stone mason. Local accommodations will be provided by Linda McElroy. His estimated fee will be about \$750/per day for two men, multiplied by 10 days.

Suzanne Carlson, restoration architect and long time NEARA Board member, would provide documentation from the NEARA Archives and site reports of this chamber done in the 1980s, together with drawings of its condition at that time. Additionally, she would see that the resulting report is published in the *NEARA Journal*. She is a valuable resource person for suggesting solutions to miscellaneous problems that might arise. She would donate most of her time, perhaps expecting a small honorarium, not to exceed \$500, for expenses.

John Goff, also a restoration architect and recommended by Ms. Carlson, has shown interest in the project, and has offered advice on some architectural and archaeological issues that have been incorporated into this proposal. He has also made suggestions about how to proceed with any administrative issues that might arise with the Commonwealth and also for possible alternate additional funding should the project require expansion beyond the current concept. Such possible expansion would be limited to the archaeological component should early findings indicate that expansion is clearly indicated. There is no information at this time about cost, as it is not clear what contributions he might make.

Ted Ballard, retired engineer and NEARA Research Chairman, who has been involved in many of NEARA's research projects over the past 15 years, and who conducts his own personal research, would

also provide valuable suggestions concerning how various issues were handled on other restoration projects. His time would be minimal and at no charge.

Land Stewards: Several of the present land stewards have volunteered to help with such tasks as site preparation, creation of the small trail from the RR track, and assembling equipment and required materials (e.g., building stones) at the site. A couple of stewards have also an interest and expertise in researching information such as deeds, maps, old photos, and other historical documents that may be contained within the town's and county's archives. We expect that the stewards will assist with photography, publicity as appropriate, and ultimately site protection. **Bob Guba**, LSCOM's Trails Coordinator, would supervise the site preparation work..

Deed Researcher: Should the project require assistance from a professional deed researcher, **June Miller**, former NEARA research member who is familiar with stone chambers, as well as full time professional deed researcher, has agreed to help if needed. She would also be willing to train one or more of our volunteers to do this kind of work. She might charge up to a couple of hundred \$.

PROJECT SCOPE

Phase I – Site preparation. Brush out the area around the chamber and create a flat area in front of the chamber on which to store equipment and materials. Brush out one side of the RR track from the Rt. 27 monument company to a small stream crossing under the RR bed, and from there cut a short trail to the site from the RR track. This short trail need be only wide enough for a backhoe to bring in and stockpile building stones from the town's supply of stones. The number of additional stones needed would not be great. This work would be done in the spring of 2006, largely with Acton volunteers.

Phase II – Chamber deconstruction: The west wall and tunnel of the chamber to be restored would be taken down and the stones piled. The roof slabs would be removed and set on the hillside. The soil outside of the collapsing west wall would be dug out and piled. Summer 2006. Work to be done by the stone masons.

Conditional Phase III – Archaeological study: It will not be known until the deconstruction of the wall and removal of the soil behind the wall and at the entrance to the tunnel is begun whether or not an archaeological component for the project should be carried out. Once the deconstruction is begun, the stone masons should be able to tell from the material removed whether it appears to have been disturbed since original construction or not. It is not thought at this time that the chamber was used as a habitation site. There is so much silt at the entrance that any attempts at dating through stratigraphy studies would be severely compromised. If conducted, summer 2006.

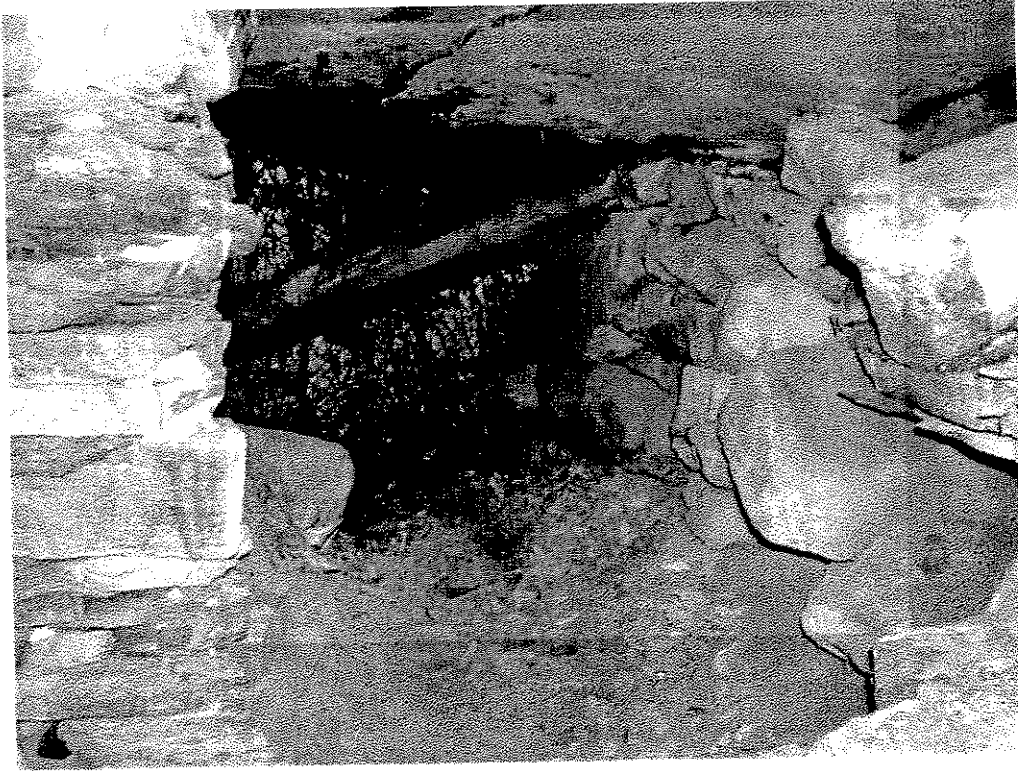
Phase IV – Reconstruction: Reconstruction of the west wall would be performed by two stone masons experienced in these types of structures, working perhaps a total of 10 days, but not necessarily consecutively. They will charge \$750/day for two men. Summer into early fall 2006. Backfilling to be complete before frost, fall 2006.

Phase V – Report writing and documentation. Fall and winter of 2005 through winter of 2007. To be carried out by volunteers from both NEARA and Acton Land Stewards.

Phase VI – Publication: *NEARA Journal* will take this on. Timing will depend on other articles in the queue. There will be no charge.

Phase VII – Publicity and site protection. Some publicity should take place concurrent with the stone work. Other publicity could be undertaken after reports are written. The Land Stewardship Committee would like to erect a permanent marker or educational kiosk to signal that the site is valuable and historic, in hopes of averting possible vandalism. Both NEARA and LSCOM feel that the chamber is already well enough known in the neighborhood that keeping it quiet is not a realistic aim.

SOUTH VIEW



WEST WALL EROSION



ENTRANCE



ENTRY WAY



EROSION WEST WALL

